

**Project Title: A Telerehabilitation Approach to Enhance Quality of Life Through Exercise  
Among Adults With Paraplegia: Study Protocol.**

**Principal Investigator**

Shane Sweet, Ph.D.

Department of Kinesiology & Physical Education, Faculty of Education, McGill University

Telephone: (514) 398-4184 ext. 09903 Email: shane.sweet@mcgill.ca

***Study Protocol***

Interested participants will meet over the phone with a research assistant to assess their eligibility for the study, provide their informed consent, and confirm that they meet the requirements for installing the Remote Education, Augmented Communication, Training, and Supervision (REACTS) software (Innovative Imaging Technologies), which is the video-based telerehabilitation software and that they know how to use the software. REACTS is an interactive audio-video software that enables secure live communication and interaction between two or more individuals over an encrypted network. REACTS also allows for multi-feed streaming where multiple webcams can be connected and for multimedia sharing. All sessions can also be video recorded if the participant accepts the recording. In addition to using the video-audio and secure features, the exercise counselor also enables the multimedia sharing platform where both she and the participants can edit a shared document (eg, action plans). Both the participant and the exercise counselor use a Windows-based computer meeting the software requirements.

Next, participants will be invited to complete the baseline questionnaire either verbally over the phone (with an emailed or mailed copy of the questionnaire to follow along with) or electronically using an online survey platform (SurveyGizmo). If the questionnaire package is mailed, a 1-day courier service will be used to minimize the delay. Once the baseline questionnaire is completed, the research assistant will randomly assign participants to the intervention or control group by opening a blinded, prelabeled (1-24), randomly ordered envelope to assign participants to one of two groups. The randomization is also stratified by gender (16 men, 8 women) in attempt to have a representative sample by gender [43]. The envelopes will be prepared by another member of the research team not directly involved in the data collection. The random allocation will be determined by a randomization tool (randomizer.org). Participants will be informed of their group assignment and told that another research assistant, blinded to their group allocation, will contact them to complete the same questionnaire at two other time points (6 weeks and 10 weeks from baseline). These follow-up data collection time points (6 weeks and 10 weeks) are set to represent the mid and end of the 8-week intervention, which will start 2 weeks after baseline. Participants will receive up to Can \$100 for completing the study. Specifically, they will receive \$30, \$35, and \$35 if they complete the baseline, 6-week, and 10-week questionnaires, respectively.

### ***Intervention Group***

For participants assigned to the intervention group, the research assistant will schedule the participants' first intervention session with the exercise counselor 2 weeks after their baseline assessment. The 2-week delay will allow us to send intervention-related materials (eg, webcams) and train participants on the REACTS software.

### ***Intervention Format***

The exercise intervention will be delivered by a kinesiologist trained in behavioral counseling and the adapted exercise in a Web based face-to-face format through the REACTS interactive audio-video software. Intervention participants will receive 1 weekly exercise session for 8 weeks. An 8-week intervention was chosen (1) because the 8-week mark was associated with the greatest increases in Get in Motion clients' exercise participation behavior [18] and represented the time point with the highest number of dropouts [21], and (2) to ensure feasibility for completion of the pilot RCT. The exercise counselor will receive behavior change skills training to ensure she is capable of fostering the psychological needs within SDT and apply behavior change techniques. The counselor will also participate in a motivational interviewing workshop to fine-tune her counseling skills. The use of motivational counseling intervention methods do not have any detrimental effects on exercise participation levels as motivationally focused interventions have been shown to be as effective as structured exercise interventions [44]. Across all of the eight intervention sessions, the counselor will create a social environment that is congruent with SDT.

### ***Intervention Components***

The exercise counselor will individually tailor her approach to each participant by understanding and taking into consideration the participant's past and current exercise experiences (including a discussion of any prescribed exercise programs after completing an outpatient rehabilitation program), motives to be physically active (eg, improve functional ability, enhance participation in daily/social activities), salient concerns and barriers regarding exercise participation, and their physical home environment. Throughout the intervention, the exercise counselor and participants will co-construct and collaboratively adapt the participants' exercise goals. SDT is at the core of this proposed intervention and a Theory Coding Scheme [38] will be used to evaluate the extent to which the theory is used, applied, and tested within the intervention. In line with the Theory Coding Scheme, we have linked each of our intervention components to either the three basic psychological needs, autonomous motivation, and/or exercise participation as illustrated in Figure 2. The specific weeks that each intervention component is planned to be implemented is shown in the first column of Figure 2 (Week #). Although the intervention components have been attributed to specific counseling sessions/weeks, the timing of the intervention components may differ between participants. The intervention is not standardized because, to be in line with SDT, the intervention will be tailored to the participants. As such, the participants' interests and goals will be at the forefront of each session, and some components may be used earlier or later than outlined in Figure 2. Thus, the exercise counselor will be trained to use the model as a guide rather than a set protocol.

### ***Control Group***

Participants assigned to the control group will be asked to continue with their regular routine for the next 2 months. We recognize that a compensatory rivalry bias [45] may occur as participants in the control group may seek out their own exercise program, which may then reduce the intervention's effect. To help minimize this bias, the research assistant will remind control participants, after they complete the baseline questionnaire, of the importance of keeping their regular routine for the following 10 weeks. The control group will also be offered an exercise counseling session following the completion of the 10-week data collection time point.